UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/466,982	12/17/1999	WHYNN VICTOR LOVETTE	104421	1810

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ART UNIT	PAPER NUMBER
2612	

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 April 2004*.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9,11-13 and 15-23* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9,11-13 and 15-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____ .

DETAILED ACTION

Response to Amendment

1.   The amendments, filed on 04/26/2004, have been entered and made of record.

Claims 1-9, 11-13 and 15-23 are pending.

Response to Arguments

2.   Applicant's arguments filed 04/26/2004 have been fully considered but they are

not persuasive.   The Applicant's arguments will be addressed in the context of the

rejected claims.

Claim Rejections - 35 USC § 103

3.   The text of those sections of Title 35, U.S. Code not included in this action can be

found in a prior Office action.

4.   Claims 1 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by

Chahal et al. (US #4,525,741).

       Regarding claim 1, Chahal '741 teaches a method of calibrating video,

comprising:

       calibrating at least one of pixel offset and pixel gain of a video signal via digital

hardware (see Abstract; col. 3 lines 3-39);

       calibrating for pixel gain by covering a video channel (channel A) with an

automatic gain control tab (gain adjust block 11) (Figs. 1 & 5, col. 3 line 54 - col. 6 line

61; col. 7 lines 37-68; col. 8 line 15 – col. 10 line 47); and

calibrating for pixel gain by multiplying a video signal output (output from D/A converter 29) from an integrator (comparator 19, CEL 21, U/D counter 24/25, D/A converters 28/29), which can compensate for pixel error for both a video channel (channel A) with an automatic gain control tab (11) and a video channel (channel B) other than a video channel (channel A) covered with the automatic gain control tab, with a video signal inputted to a video channel (channel B) other than the video channel (channel A) covered with the automatic gain control tab and provided by a pixel offset process (digital comparator 18, CEL 20, counters 22/23 and D/A converters 26/27) (Figs. 1 & 5, col. 3 line 54 - col. 6 line 61; col. 7 lines 37-68; col. 8 line 15 – col. 10 line 47).

Regarding claim **21**, Chahal '741 teaches an image sensor (CCD 10) comprising:

digital hardware (see Fig. 1) that calibrates at least one of pixel offset and pixel gain of a video signal (see Abstract; col. 3 lines 3-39);

an automatic gain control tab (gain adjust block 11) that covers a video channel (channel A) (Figs. 1 & 5, col. 3 line 54 - col. 6 line 61; col. 7 lines 37-68; col. 8 line 15 – col. 10 line 47); and

an integrator (comparator 19, CEL 21, U/D counter 25), wherein pixel gain is calibrated for by multiplying a video signal output (output from D/A converter 29) from the integrator with a video signal inputted to a video channel (channel B) other than the video channel (channel A) covered with the automatic gain control tab and provided by a pixel offset process (digital comparator 18, CEL 20, counters 22/23 and D/A converters 26/27) (Figs. 1 & 5, col. 3 line 54 - col. 6 line 61; col. 7 lines 37-68; col. 8 line 15 – col. 10 line 47).

Claim Rejections - 35 USC § 103

5.   Claims 2-4, 6, 9 and 22-23 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Chahal '741 in view of Frey (US #5,925,875).

As to claim **2**, claim 2 differs from Chahal '741 in that the claim further requires

the method further includes calibrating for pixel offset by setting a correction range for

pixel offset calibration within a predetermined range and defined by the pixels with the

largest and smallest offset values, adjusting an uncalibrated video signal to be within the

range, and providing an offset level set point which can provide compensation for

changes in at least temperature and time in a video. However, the limitation is well

known in the art as taught in Frey. In the same field of endeavor, Frey '875 teaches a

method of calibrating video comprising calibrating at least one of pixel offset (Figs. 2, 7

and 10, active update offset system 40) and pixel gain (Fig. 2, signal processor 20, gain

table 24, multiplier 26) of a video signal via digital hardware. Frey further teaches that

the method also includes calibrating for pixel offset by setting a range for pixel offset

calibration, adjusting an uncalibrated video signal to be within the range, and providing

an offset level set point (Figs. 2, 7 and 10, offset update 53/5571/72/73). Frey also

teaches that the predetermined range is defined by the pixels with the largest and smallest

offset values (col. 12 lines 1-42; col. 14 line 36 – col. 15 line 23). Frey teaches that the

offset level set point provides compensation for changes in at least temperature and time

in a video (col. 1 lines 38-56; col. 5 lines 51-62). In light of the teaching from Frey, it

would have been obvious to one of ordinary skill in the art at the time the invention was

made to modify the image restoration method and system taught in Chahal by setting a

range for pixel offset calibration, adjusting an uncalibrated video signal to be within the

range, and providing an offset level set point so as to satisfy the need for reliably

correcting fixed pattern noise errors in the imaging array.

As to claim **3**, Frey '875 teaches the method further includes calibrating for pixel

offset by subtracting a current state of offset of a video signal from the offset level set

point to provide an error value (Figs. 2, 7, 10 and 12, adder 52).

As to claim **4**, Frey '875 teaches the method further includes calibrating for pixel

offset by applying a variable gain factor to the error value to provide a variable gain/error

value (Figs. 2, 7 and 12, gain circuit 54).

As to claim **6**, Frey '875 teaches the method further includes calibrating for pixel

offset by adding the variable gain/error value to a pixel offset value stored in a storage

device to provide a specified pixel offset value (Figs. 2, 7 and 12, adder 56, memory 58,

voter 80).

As to claim **9**, Frey teaches the method further includes calibrating for pixel gain

by setting a range for pixel gain calibration (Figs. 2, 7 and 12, gain tables 24), adjusting

an uncalibrated video signal to be within the range, and providing for continuing

compensation of changes in video intensity (Figs. 2, 7 and 12, multiplier 26)

As to claim **22**, claim 2 differs from Chahal in that the claim further requires the

image sensor further includes a device that calibrates for pixel offset by setting a range

for pixel offset calibration, adjusting an uncalibrated video signal to be within the range,

and providing an offset level set point. However, the limitation is well known in the art

as taught in Frey. In the same field of endeavor, Frey '875 teaches an image sensor (Fig.

1, focal plane array 14) for use with a document scanner (Fig. 1, mechanism 18)

comprising digital hardware (Fig. 1, signal processor 20) that calibrates at least one of

pixel offset and pixel gain of a video signal. Frey further teaches that the image sensor

also includes a device that calibrates for pixel offset by setting a range for pixel offset

calibration, adjusting an uncalibrated video signal to be within the range, and providing

an offset level set point (Figs. 2, 7 and 10, offset update 53/5571/72/73). In light of the

teaching from Frey, it would have been obvious to one of ordinary skill in the art at the

time the invention was made to modify the image restoration method and system taught

in Chahal by setting a range for pixel offset calibration, adjusting an uncalibrated video

signal to be within the range, and providing an offset level set point so as to satisfy the

need for reliably correcting fixed pattern noise errors in the imaging array.

As to claim **23**, Frey '875 teaches that the image sensor further includes a device

that calibrates for pixel gain by setting a range for pixel gain calibration (Figs. 2, 7 and

12, gain tables 24), adjusting an uncalibrated video signal to be within the range, and

providing for continuing compensation of changes in video intensity (Figs. 2, 7 and 12,

multiplier 26).

6.   Claims 2-9, 11-13, 15-20 and 22-23 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Chahal '741 in view of Johnson et al. (US #6,252,536 B1).

As to claim **2**, claim 2 differs from Chahal in that the claim further requires the

method further includes calibrating for pixel offset by setting a correction range for pixel

offset calibration within a predetermined range and defined by the pixels with the largest

and smallest offset values, adjusting an uncalibrated video signal to be within the range,

and providing an offset level set point which can provide compensation for changes in at

least temperature and time in a video. However, the limitation is well known in the art as

taught in Johnson '536. In the same field of endeavor, Johnson '536 teaches a method of

calibrating video comprising calibrating at least one of pixel offset and pixel gain of a

video signal via digital hardware (Figs. 1 and 8A, dynamic range extension signal

processing DRX 2/20). Johnson '536 further teaches that the method also includes

calibrating for pixel offset by setting a range for pixel offset calibration, adjusting an

uncalibrated video signal to be within the range, and providing an offset level set point

(Figs. 1 and 8A, 2-bit ADC 11, logic circuitry 8, offset 1-3, and Mux. 9). Johnson further

teaches a predetermined range is defined by the pixels with the largest and smallest offset

values (col. 5 line 59 – col. 6 line 38; col. 11 lines 9-60). Johnson teaches that the offset

level set point provides compensation for changes in at least temperature and time in a

video (col. 1 lines 48-63). In light of the teaching from Johnson, it would have been

obvious to one of ordinary skill in the art at the time the invention was made to modify

the image restoration method and system taught in Chahal setting a range for pixel offset

calibration, adjusting an uncalibrated video signal to be within the range, and providing

an offset level set point so as to improve the dynamic range of digital images.

As to claim **3**, Johnson teaches the method further includes calibrating for pixel

offset by subtracting a current state of offset of a video signal from the offset level set

point to provide an error value (Figs. 1, 4, 8A, 8B, 9A; offsets A-C and output of the 2-bit

ADC 11).

As to claim **4**, Johnson teaches the method further includes calibrating for pixel

offset by applying a variable gain factor to the error value to provide a variable gain/error

value (Figs. 1, 5, 8A, Mux. 11 and Logic circuitry 8).

As to claim **5**, Johnson shows in figure 2 that the variable gain factor is fixed for different trip points.

As to claim **6**, Johnson teaches the method further includes calibrating for pixel offset by adding the variable gain/error value to a pixel offset value stored in a storage device to provide a specified pixel offset value (Fig. 1, output from Logic circuitry 8 and offset registers 21-23).

As to claim **7**, Johnson teaches the method further includes calibrating for pixel offset by dividing the specified pixel offset value by 16 (col. 11 line 19-60).

As to claim **8**, Johnson teaches the method further includes calibrating for pixel offset by adding the divided value to the video signal adjusted to be within the range (Fig. 1, summer 10).

As to claim **9**, Johnson teaches the method further includes calibrating for pixel gain by setting a range for pixel gain calibration (Figs. 1, 3, 7 and 8E, VGA 5), adjusting an uncalibrated video signal to be within the range, and providing for continuing compensation of changes in video intensity.

As to claim **11**, Johnson teaches the method further includes calibrating for pixel gain by subtracting a current state of gain of a video signal from an automatic gain control tab set point to provide an error value (Fig. 7, col. 7 line 50 – col. 8 line 33).

As to claim **12**, Johnson teaches the method further includes calibrating for pixel gain by inputting the error value into an integrator to apply the error value to a video signal over a period of time (Fig. 8E, average high/low gain circuits 401/402).

As to claim **13**, Chahal shows in figure 1 a video signal (output from D/A converter 28) output from the integrator (comparator 19, CEL 21, U/D counter 25) with a

video signal inputted to the video channel (channel A) covered with the automatic gain control tab.

As to claim **15**, Chahal, as modified by Johnson, teaches that calibrating for pixel gain by subtracting a current state of gain of a video signal from a white level set point to provide an error value (Chahal, Fig. 1, gain reference to the comparator 19) (Johnson, Figs. 1, 4, 8A, 8B, 9A; offsets A-C and pix_gain A/B/C).

As to claim **16**, Chahal, as modified by Johnson, teaches that calibrating for pixel gain by applying a variable gain factor to the error value to provide a variable gain/error value (Johnson, Figs. 1, 5, 8A, Mux. 11 and Logic circuitry 8).

As to claim **17**, Chahal, as modified by Johnson, teaches that the variable gain factor is fixed for different trip points (Johnson, see Fig. 2).

As to claim **18**, Chahal, as modified by Johnson, teaches that calibrating for pixel gain by adding the variable gain/error value to a pixel gain value stored in a storage device, to provide a specified pixel gain value (Johnson, Fig. 1, output from Logic circuitry 8 and offset registers 21-23).

As to claim **19**, Chahal, as modified by Johnson, teaches that calibrating for pixel gain by dividing the specified pixel gain value by 16 (Johnson, col. 11 line 19-60).

As to claim **20**, Chahal, as modified by Johnson, teaches that calibrating for pixel gain by multiplying the divided value to the video signal adjusted to be within the range (Fig. 1, summer 10).

As to claim **22**, claim 2 differs from Chahal in that the claim further requires the image sensor further includes a device that calibrates for pixel offset by setting a range for pixel offset calibration, adjusting an uncalibrated video signal to be within the range,

and providing an offset level set point. However, the limitation is well known in the art as taught in Johnson. In the same field of endeavor, Johnson teaches an image sensor (Figs. 1 and 8A, imaging device 3) for use with a document scanner (col. 1 lines 37-47) comprising digital hardware (Figs. 1 and 8A, dynamic range extension signal processing 2/20) that calibrates at least one of pixel offset and pixel gain of a video signal. Johnson further teaches that the image sensor also includes a device that calibrates for pixel offset by setting a range for pixel offset calibration, adjusting an uncalibrated video signal to be within the range, and providing an offset level set point (Figs. 1 and 8A, 2-bit ADC 11, logic circuitry 8, offset 1-3, and Mux. 9). In light of the teaching from Johnson, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the image restoration method and system taught in Chahal by setting a range for pixel offset calibration, adjusting an uncalibrated video signal to be within the range, and providing an offset level set point so as to improve the dynamic range of digital images.

As to claim **23**, Johnson teaches that the image sensor further includes a device that calibrates for pixel gain by setting a range for pixel gain calibration, adjusting an uncalibrated video signal to be within the range, and providing for continuing compensation of changes in video intensity (Figs. 1, 3, 7 and 8E, VGA 5; col. 7 line 50 – col. 8 line 33).

Conclusion

7.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the

advisory action. In no event, however, will the statutory period for reply expire later than

SIX MONTHS from the mailing date of this final action.

8.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Ngoc-Yen T. Vu whose telephone number is 703-305-

4946. The examiner can normally be reached on Mon. – Fri. from 8:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Wendy R. Garber can be reached on 703-305-4929. The fax phone number

for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR. Status

information for unpublished applications is available through Private PAIR only. For

more information about the PAIR system, see http://pair-direct.uspto.gov. Should you

have questions on access to the Private PAIR system, contact the Electronic Business

Center (EBC) at 866-217-9197 (toll-free).
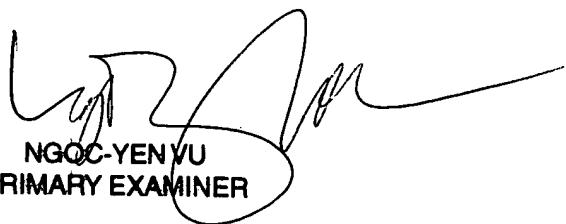
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